

# THE ASSESSMENT OF POSITIVITY AND NEGATIVITY IN SOCIAL NETWORKS: THE RELIABILITY AND VALIDITY OF THE SOCIAL RELATIONSHIPS INDEX

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*The Social Relationships Index (SRI) was designed to examine positivity and negativity in social relationships. Unique features of this scale include its brevity and the ability to examine relationship positivity and negativity at the level of the specific individual and social network. The SRI's psychometric properties were examined in three studies. The SRI demonstrated good psychometric properties, including test-retest reliability for the assessment of positivity and negativity, and of relationship classifications across social networks. Additionally, discriminant and convergent validity was established with existing social relationship and personality scales. Finally, the SRI showed some generalizability across different contexts. These studies suggest that the SRI is a reliable and valid alternative measure for use in health studies that require a shorter assessment of relationships. © 2009 Wiley Periodicals, Inc.*

Within the past century, a large body of epidemiological and experimental evidence has accumulated to suggest the importance of social relationships for our mental health and physical well-being (Berkman, Glass, Brissette, & Seeman, 2000; Cohen,

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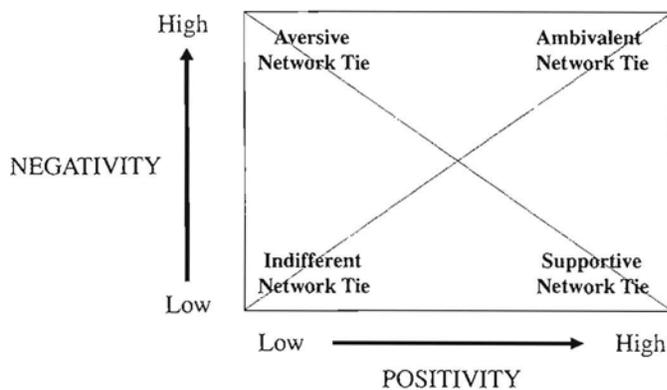
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1988; Cohen & Wills, 1985; Seeman, 1996). Social relationships have been associated with stress-buffering influences (Cohen & Wills, 1985), greater life satisfaction (Walen & Lachman, 2001), and lower rates of mood disorders (Bertera, 2005). Additionally, both quantitative (i.e., social support structure) and qualitative (i.e., social support functions) aspects of social relationships predict various health outcomes, such as reductions in blood pressure and heart rate, reduced odds of myocardial infarction, post-myocardial infarction survival, and reported health status (see Berkman et al., 2000 for a review; Newsom, Mahan, Rook, & Krause, 2008).

A closer look into the dynamics of social relationships, however, reveals that along with providing a supportive haven the same relationship can also be a significant source of distress (Rook, 1998). For instance, Newsom et al. (2008) report that in older adults, persistent negative social exchanges were significantly related to declines in self-rated health, a higher number of physical health conditions, and decreases in physical functioning over a 2-year period. It would seem intuitive that positive and negative aspects of relationships would be reciprocally related, yet research has shown these to be separable dimensions that have independent influences on various outcomes (Finch & Zautra, 1992; McCaskill & Lakey, 2000; Vinokur, Price, & Caplan, 1996). For instance, McCaskill and Lakey found that not only were perceived support and social undermining two distinct factors, but perceived support was related to positive affect, whereas social undermining was related to negative affect. Additionally, researchers have found that in cross-sectional designs, positive and negative social exchanges were associated with positive and negative affect, respectively; however, over a longer period of time, only negative exchanges predicted both positive and negative affect (Newsom, Nishishiba, Morgan, & Rook, 2003). As we have found (Uchino, 2004; Uchino, Holt-Lunstad, Uno, & Flinders, 2001), such data on the separability of positive and negative aspects of relationship can have important conceptual and methodological implications.

We have argued that individuals in one's social network can be heuristically classified as sources of positivity, negativity, or a source of both positivity and negativity. In Figure 1, shown in the high positivity/low negativity corner, are the social network ties that are primarily sources of social support or other pleasant interpersonal experiences (e.g., supportive friend). On the other hand, in the low positivity/high negativity corner are network ties that are primarily sources of negativity or what we label socially aversive ties (e.g., an unreasonable work supervisor). The low



**Figure 1.** General conceptual framework incorporating the positive and negative aspects of social relationships.

positivity/low negativity corner is labeled social indifference and this reflects network ties that are characterized by relatively low frequency, depth, or importance (e.g., casual coworker). Finally, the high positivity/high negativity corner contains prototypical ambivalent network ties. These are network ties that are a source of both high positivity and high negativity (e.g., a loving, but argumentative in-law). That is, although this relationship may be a source of distress, there are also positive aspects of the relationship that make it important to maintain.

Importantly, there has not been a large extent of health research that emphasizes both the positive and negative aspects of relationships (Rook, 1998), which may reflect the lack of validated measures that allow for such simultaneous assessments. The most established measures that do address both positivity and negativity within relationships include the Arizona Social Support Interview Schedule (ASSIS; Barrera, 1980) and the Quality of Relationships Inventory (QRI, Pierce, Sarason, Sarason, Solky-Butzel, & Nagle, 1997). Both the ASSIS and the QRI have good psychometric properties and predictive validity (Barrera; Pierce, Sarason et al., 1997). However, the QRI has considerably more items (i.e., 39) and the interview format of the ASSIS can make these assessments time consuming. The adaptation of shorter assessments that can be used in health settings (e.g., epidemiological research) is of importance when applying such conceptual issues to the study of health outcomes.

The Social Relationships Index (SRI) was constructed to be brief and address a conceptual framework in which both positivity and negativity are separable dimensions (Uchino et al., 2001). The SRI has a number of conceptual and methodological advantages. In the past, positivity and negativity has been examined in general, averaging across network members, rather than for a specific person. This is problematic because it would be unclear whether a network ambivalence score comprised specific ambivalent network members, or an average of supportive and aversive ties (Pagel, Erdly, & Becker, 1987; Schuster, Kessler, & Aseltine, 1990). On the other hand, the SRI can be used to assess specific individuals within one's social network, as well as provide a summary within relationship categories (e.g., number of supportive familial ties), or across the network as a whole. This is also important for models that postulate that the links between relationships and health depend on relationship type (Bertera, 2005; Okun & Lockwood, 2003). For instance, developmental models of social networks in the older adult argue for the importance of familial ties in providing support (Antonucci & Akiyama, 1987; Carstensen, 1992; Fingerman, Hay, & Birditt, 2004; Krause & Rook, 2003).

In our program of research, we have documented the predictive validity of the SRI on measures of psychological well-being and physical health outcomes, including cardiovascular reactivity and ambulatory blood pressure (e.g., Holt-Lunstad, Uchino, Smith, Olsen-Cerny, & Nealey-Moore, 2003; Uchino et al., 2001). Thus, the main purpose of this article is to present evidence on the psychometric properties of the SRI through three different studies from our larger program of research. Across these studies, we present evidence for the test-retest reliability of the SRI, including its generalizability across relationship contexts. Convergent validity is also examined by utilizing longer, but more established assessments of positivity and negativity in relationships. Finally, it has been argued that relationship measures may overlap with personality processes that influence perceptions of support (Bolger, 1990). Thus, we examine the discriminant validity of the SRI with relevant personality measures that have shown in prior studies to be health-relevant (e.g., trait hostility).

## Study 1: Factor Analyses and Convergent Validity with the QRI for Specific Relationships

### METHOD

#### *Participants and Procedure*

Eighty-eight undergraduate women (mean age = 21) and one of their close, non-romantic male or female friends, whom they had known for at least 6 months, were recruited for this study (see Uno, Uchino, & Smith, 2002). In the larger study, the friends were recruited for the purpose of providing support to the participant and did not complete the questionnaires; hence, they are not included in analyses. The ethnic composition for this sample was 82% Caucasian, 9% Asian/Pacific Islander, and other (i.e., 9% African American, Latino/Hispanic, and Native American). The median yearly income was \$5,000–\$5,999. Participants were asked to rate the friendship quality of their friend using the SRI and the QRI.

#### *Questionnaires*

*Social Relationships Index (SRI)*. For the SRI, participants were instructed to rate how helpful and how upsetting they feel their friend is in a stress-support context (i.e., when they need advice, understanding, or a favor; 1 = *not at all*, 6 = *very much*). Thus, three items were used for the calculation of friendship positivity (i.e., how helpful when needing advice, understanding, or a favor), and three items were used for the calculation of friendship negativity (i.e., how upsetting when needing advice, understanding, or a favor).

*Quality of Relationship Inventory (QRI)*. The QRI (Pierce, Sarason et al., 1997) assesses the supportive and conflictual aspects of a specific relationship and was used to establish convergent validity for the SRI-based relationship ratings. The QRI includes 39 items and has good psychometric properties (see Pierce, Sarason et al., 1997). The internal consistencies for the QRI in this study were .80 for support and .84 for conflict.

### RESULTS

Descriptive data are provided in Table 1. Consistent with prior work, negative aspects of relationships are rated as lower overall compared to positive aspects of relationships. This may reflect the lower incidence of negative interpersonal exchanges compared to positive exchanges in daily life (Rook, 1998).

We first conducted an exploratory factor analysis of the helpful and upset items using an oblique rotation (Harris-Kaiser). An oblique rotation was used due to prior work suggesting these are correlated factors. However, we also used an orthogonal rotation (varimax) and the results were similar across these rotation methods. A visual analysis of the scree plot (i.e., discontinuity), in combination with the Kaiser-Guttman rule (i.e., eigenvalues greater than 1), revealed two primary factors with eigenvalues of 2.4 and 1.7, respectively. The inter-factor correlation was  $-.17$ . As shown in Table 2, these factors clearly corresponded to a positivity factor and a negativity factor

Table 1. Study 1. Means and Standard Deviations ( $n = 88$ )

Variable	Mean	SD
SRI support	4.65	.90
SRI upset	1.42	.67
QRI support	3.40	.53
QRI conflict	1.54	.50

Table 2. Study 1. Standardized Regression Coefficients for Rotated Factor Pattern

Variable	Factor 1	Factor 2
Helpful-advice	.90	.09
Helpful-understanding	.73	-.20
Helpful-favor	.71	.09
Upset-advice	.09	.87
Upset-understanding	.03	.91
Upset-favor	-.13	.76

as evidence by their simple structure with the SRI items tapping those constructs. This factor analysis is also consistent with the calculated internal consistency of the six SRI items used to assess relationship positivity and negativity during support. The Chronbach's alpha was .69 and .80 for positivity and negativity, respectively. Due to the results of these analyses, the items were averaged to produce two separate composite indices of friendship positivity and negativity during support (see Uchino et al., 2001; Uno et al., 2002).

We next examined the association between the SRI and the QRI (Pierce, Sarason et al., 1997), a well-established measure of relationship-specific positivity and negativity. Importantly, the SRI showed moderate to high associations with the QRI. The SRI positivity subscale was correlated .76 ( $p < .001$ ) with the QRI support subscale, whereas the SRI negativity subscale was correlated .50 ( $p < .001$ ) with the QRI conflict subscale. Due to epidemiological links between social support and health, we have specifically developed the SRI for a support seeking context; however, other researchers may wish to use this scale in a different context. To explore this potential use of the SRI further, Study 2 examined SRI ratings of positivity and negativity across three different contexts (i.e., stress, positive, and neutral; see Reis & Gable, 1990) over a period of time and examined the convergent and discriminant validity of the SRI.

Study 2: Generalization of the SRI Assessment to other Contexts and Over Time

## METHOD

### Participants and Procedure

Fifty-seven women and 51 men (mean age = 22.3) were recruited from introductory psychology courses (see Holt-Lunstad, Uchino, Smith, & Hicks, 2007). The ethnic composition of this sample was 75% White, 11% Asian/Pacific Islander, 10% Latino/

Hispanic, and other (i.e., 4% African American and Native American). The median yearly income was \$15,000–\$24,999. Testing was divided into two sessions, approximately 2 weeks apart. In the first session, participants were asked to complete the SRI (Time 1). Approximately 2 weeks later, at the second session, SRI ratings for the friend were completed again, along with the additional questionnaires (Time 2).

### *Questionnaires*

*Social Relationships Index (SRI)*. For this study, participants rated their friendships in terms of how helpful and upsetting they were (1 = *not at all*, 6 = *extremely*) across three contexts: (a) a stress context (i.e., when they needed support such as advice, understanding, or a favor); (b) a positive context (i.e., when they were excited, happy, or proud of something); and (c) a neutral context (i.e., during routine daily interactions, conversations, or activities). It should be noted that to reduce the number of scale items, the separate questions used in Study 1 for a stress-support context (i.e., advice, understanding, favor) were combined based on the factor analyses conducted for Study 1. Therefore, the participants completed the SRI questions of how helpful and upsetting a friend was for three different contexts, producing a total of six questions.

*Quality of Relationship Inventory (QRI)*. See Study 1 for general scale information. The internal consistencies for the QRI in this study were similarly high at .78 for support and .84 for conflict.

*Interpersonal Support Evaluation List (ISEL)*. The ISEL contained 40 questions and assessed general perceptions of social support. Cohen, Mermelstein, Kamarck, and Hoberman (1985) reported good internal consistency and test–retest reliabilities for the total scale. The internal consistency for this scale was high in our study (.89).

*Test of Negative Social Exchanges (TENSE)*. The TENSE contained 18 questions and assessed global interpersonal stress (e.g., insensitivity, interference). It is statistically independent from measures of social support and also has good psychometric properties (Ruehlman & Karoly, 1991). The cronbach's alpha in this study was similarly high (.89).

*Aggression Questionnaire (AQ)*. The 29-item AQ assessed the cognitive, affective, and behavioral aspects of trait aggression. The AQ has good 2-month test–retest reliabilities ( $r$ 's = .72 to .80) and internal consistencies (.72 to .89, Buss & Perry, 1992). In the current study, the Cronbach's alpha was .91.

*Trait Positive and Negative Affect (PANAS)*. The PANAS contains 20 items and assesses the independent factors of trait positive and negative affect (Watson, Clark, & Tellegen, 1988). It has good test–retest reliability and convergent/discriminant validity (Watson

et al.). Internal consistencies for the scale were .82 and .80 for positive and negative affect, respectively.

## RESULTS

### *Consistency of Friendship Ratings from the SRI across Contexts and Stability Over Time*

Preliminary analyses revealed that the means and standard deviations were comparable to Study 1, with negativity associated with lower ratings compared to positivity across these three contexts (i.e., stress, positive, neutral). We should also note that, similar to Study 1, exploratory factor analyses (data not shown) unambiguously revealed a two factor structure (i.e., positivity and negativity) across both Time 1 and Time 2.

In our main analyses, we examined the correlations among positivity and negativity ratings across these contexts. In this and all analyses we statistically controlled for gender because preliminary analyses revealed that gender was not a consistent moderator of these associations.<sup>1</sup> We also examined each time point separately to examine the consistency of the results. The correlations across these contexts for positivity ( $r$ 's = .55 to .65,  $p$ 's < .001) and negativity ( $r$ 's = .61 to .75,  $p$ 's < .001) during Time 1 were moderate to high (see Table 3). During Time 2, these correlations were similar, albeit lower for some contexts. These data suggest some overlap in contexts, but mainly that individuals are able to discriminate between the situational contexts that are associated with specific relationships (Gable, Reis, & Impett, 2004).

We next examined the 2-week test-retest correlation within each context. When seeking support during stress, positivity ( $r = .46$ ,  $p < .001$ ) and negativity ( $r = .63$ ,  $p < .001$ ) ratings for the friend were stable. Test-retest correlations of similar magnitudes were found when sharing positive events ( $r = .43$ ,  $p < .001$  for positivity and  $r = .52$ ,  $p < .001$  for negativity) and during everyday interactions ( $r = .45$ ,  $p < .001$  for positivity and  $r = .56$ ,  $p < .001$  for negativity). Consistent with the benefits of aggregation, averaging across contexts produced the highest test-retest reliability for overall friendship positivity ( $r = .59$ ,  $p < .001$ ) and negativity ( $r = .72$ ,  $p < .001$ ).

### *Convergent/Discriminant Validity of the SRI*

We again examined the convergent validity of the SRI with the QRI. In our analyses, we focused on SRI positivity and negativity during the stress context as this is comparable to the assessment context (i.e., stress-support) used in Study 1. We utilized the SRI taken at Time 2 to keep the measurement occasion constant (similar results were found using SRI scores taken at Time 1).

Replicating Study 1, the positivity ratings during support was correlated .60 ( $p < .001$ ) with QRI support ratings (see Table 4). In addition, SRI negativity ratings during support was similarly correlated .56 ( $p < .001$ ) with the QRI conflict scale. We next examined the associations between the SRI and more global

<sup>1</sup> We also conducted exploratory analyses examining the moderation of the results presented below by gender. Only a few statistical interactions were significant (e.g., gender  $\times$  support positivity in predicting sharing positive events positivity during Time 2) and, in each case, the effects were only slightly stronger for women compared to men.

**Table 3. Study 2. Correlations Across Contexts for Friendship Positivity and Negativity for Time 1 (Top Diagonal) and Time 2 (Bottom Diagonal) (n = 104)**

Context	Positivity			Negativity		
	Stressful events	Positive events	Everyday events	Stressful events	Positive vents	Everyday events
Stressful events	1.00	.55	.58	1.00	.62	.61
Positive events	.52	1.00	.65	.53	1.00	.75
Everyday events	.35	.44	1.00	.47	.52	1.00

Note. All  $p$  values < .001.

**Table 4. Study 2. Correlations Between SRI Positivity and Negativity During Support with QRI, General Support, Conflict, and Personality Assessments (n = 108)**

Context	Measure						
	QRI support	QRI conflict	ISEL	TENSE	Trait PA	Trait NA	Trait hostility
Helpful	.60**	-.14	.18	-.14	.06	-.12	.01
Upset	-.34**	.56**	-.30**	.25*	-.18	.23*	.22*

\* $p < .05$ , \*\* $p < .01$ .

measures of support and interpersonal conflict. Although borderline significant, SRI positivity ratings during support was related to higher ISEL scores ( $r = .18$ ,  $p = .06$ ), whereas SRI negativity ratings during support were related to higher TENSE scores ( $r = .25$ ,  $p < .02$ ). Note that these associations were considerably weaker than those observed above with the QRI and are expected given that these measures assess more global aspects of relationships (i.e., across networks), rather than specific aspects.

Finally, we examined the links between the SRI and various personality factors. We focused on trait positive affect, trait negative affect, and trait hostility as prior work has found these factors to be related to health outcomes (Smith & Gallo, 2000). As shown in Table 4, we found that SRI positivity ratings during support were unrelated to these personality traits. However, SRI negativity ratings during support were related to higher trait hostility and trait negative affect. It is important to note that we found QRI conflict scores to produce the same significant links to these personality assessments as found for the SRI negativity ratings (data not shown).

The prior two studies suggest that the SRI positivity and negativity ratings were reliable and valid assessments of relationship quality within specific relationships. One benefit of the SRI is that it can be used flexibly depending on the goals of a study. A complementary approach taken in Study 3 was to obtain such positivity and negativity ratings from different social network members as well as to examine relationship quality across the social network as a whole. We examine the reliability and validity of this approach in Study 3.

### Study 3: Application of the SRI Ratings to Examining Network Categories Over Time

## METHOD

### *Participants and Procedure*

Participants were 48 men and 50 women, between the ages of 50–80 (mean age = 63.4), who were recruited through advertisements for a study on aging and health. The ethnic composition of this sample was 90% White and 10% other (i.e., Asian/Pacific Islander, African American, Latino/Hispanic, and Native American). The median yearly income was \$30,000–\$39,000. Participants completed the SRI, personality measures, and a measure of social support (ISEL) at baseline and approximately 3 months later.

### *Questionnaires (also see Study 2)*

*Social Relationships Index (SRI)*. For use of the SRI at the social network level, participants were instructed to list the initials of individuals in the following network domains: (a) spouse/significant other, (b) father, (c) mother, (d) other family, (e) friends, (f) co-workers, and (g) social acquaintances. The categories of other family, friends, co-workers, and social acquaintances were limited to five people to keep completion of the SRI to a manageable time frame. These listed individuals were then rated in terms of how helpful and upsetting they were (1 = *not at all*, 6 = *extremely*) when the participant needed advice, understanding, or a favor (same as Studies 1 and 2). In our past work, we have operationalized social relationships into the following categories: (a) a *supportive* network tie is an individual rated as greater than “1” on positivity (helpful) and only a “1” on negativity (upsetting), (b) an *aversive* network tie is an individual rated as only a “1” on positivity (helpful) and greater than “1” on negativity (upsetting), (c) an *ambivalent* network tie is an individual rated as greater than “1” on both positivity and negativity (helpful & upsetting), and (d) an *indifferent* network tie is an individual rated as only a “1” on positivity and negativity (helpful & upsetting). Consistent with Barrera (1980) and Rook (1984), we computed the total number of listed network members who fell into each of the social relationship categories.

*Interpersonal Support Evaluation List (ISEL)*. We utilized a short-form of the ISEL that contained 18 items and assessed general perceptions of social support. The internal consistency for this shortened scale was high at both Time 1 (.83) and Time 2 (.87).

*Test of Negative Social Exchanges (TENSE)*. See Study 2 for more general scale information. The internal consistency for this scale in this study was similarly high (.89).

*Aggression Questionnaire (AQ)*. Eight items from the AQ assessing the cognitive component of trait aggression (cynicism) was utilized. In the current study, the Cronbach's alphas were .80 and .88 during Time 1 and Time 2, respectively.

*Eysenck Personality Inventory (EPI)*. A short-form of the EPI was used to measure the independent personality dimensions of neuroticism and extraversion. (See Eysenck, 1958, Finch & Zautra, 1992 for psychometric information.) The Cronbach's alpha

for the current study were adequate and ranged from .60 to .75 during Time 1 and Time 2.

## RESULTS

### *Preliminary Analyses*

We first examined the frequency distribution of our total network assessment. Consistent with our prior work, chi-square analyses revealed a significant difference in the number of individuals in the different social relationship categories,  $X^2(3) = 9.55$ ,  $p < .05$ . On average, participants listed 10.41 network members at Time 1. Most of these social network members were categorized as supportive ( $M = 5.66$ ) or ambivalent ( $M = 4.47$ ). A small minority were categorized as aversive ( $M = 0.14$ ) or indifferent ( $M = 0.15$ ). Similar distributions were found at Time 2 ( $X^2(3) = 9.27$ ,  $p < .05$ ).

An important consideration in the operationalization of these social relationship categories is the specification of a cut-off point. We have used an absolute cut-off that by definition is consistent with our model (i.e., any degree of positivity or negativity). However, we also examined the correlation between our network measures of total supportive ties and ambivalent ties using our operationalization and a cut-off of greater than "3" on positivity. This same practice could not be done for negativity ratings as these ratings are typically low. Importantly, the correlation between these different operationalizations for the number of supportive ties was .90 ( $p < .002$ ) and .89 ( $p < .001$ ) during Time 1 and Time 2, respectively. For the number of ambivalent ties, these correlations were similarly strong ( $r$ 's = .91,  $p$ 's < .001) for both time points.

### *The Stability of Network Classifications and Convergent/Discriminant Validity*

We next examined the 3-month stability of the network assessments from the SRI. In this and all analyses, we statistically controlled for age and gender because preliminary analyses revealed few interactions with these factors.<sup>2</sup> The highest reliability was for total network members listed ( $r = .73$ ,  $p < .001$ ). However, most of the SRI network assessments were characterized by relatively high stability over time, including the number of supportive ties ( $r = .61$ ,  $p < .001$ ), ambivalent ties ( $r = .68$ ,  $p < .001$ ), and indifferent ties ( $r = .64$ ,  $p < .001$ ). Although statistically significant, the number of aversive ties was characterized by lower test-retest reliability ( $r = .30$ ,  $p < .01$ ).

We next examined the convergence of these network measures with the ISEL, a more traditional social support measure. We examined these associations separately

<sup>2</sup> We also conducted exploratory analyses examining the moderation of the results presented below by age and gender. Only a few significant interactions emerged. The test-retest analyses revealed a significant interaction between the number of aversive ties and age ( $p < .02$ ) and the number of indifferent ties and age ( $p < .01$ ). For the first interaction, the test-retest reliability for the number of aversive ties was higher for the relatively young (age < 63) compared to the older adults ( $r$ 's = .38 and .17, respectively). The second interaction for indifferent ties showed a stronger test-retest association between the number of indifferent ties in relatively old compared to younger individuals ( $r$ 's = .83 and .72). Three additional interactions emerged in the analyses of extraversion and neuroticism during Time 1 (2 for age and 1 for gender). However, none of these interactions were replicated during Time 2. Given the large number of tests that were conducted these results were not deemed reliable.

for each time point as a replication strategy. As expected, only the number of supportive ties was associated with greater social support at Time 1 ( $r = .39, p < .001$ ) and Time 2 ( $r = .46, p < .001$ ). These data are consistent with a total network assessment that should provide closer convergence to global support ratings than to any specific network tie (see Studies 1 and 2).

Finally, we examined the potential overlap between our SRI network measures and the personality assessments. Consistent with prior work using broad social support assessments, the number of supportive ties was related to lower trait hostility at Time 1 ( $r = -.36, p < .01$ ) and Time 2 ( $r = -.26, p < .02$ ). Supportive ties were also related to lower neuroticism at both time points ( $r$ 's =  $-.23, -.30$ , respectively,  $p$ 's  $< .03$ ). In comparison, the number of ambivalent ties was unrelated to these personality assessments. The only other significant associations were between the number of indifferent ties and lower extraversion at Time 1 ( $r = -.23, p < .03$ ) and Time 2 ( $r = -.30, p < .01$ ).

## DISCUSSION

The psychometric properties of the SRI were examined as a brief measure of relationship positivity and negativity. We examined its factorial structure via exploratory factor analyses, tested the convergent and discriminant validity of the SRI with established relationship and personality measures, its ability to generalize to different contexts, and its reliability up to 3 months. The SRI demonstrated good convergent validity with the QRI (Pierce, Sarason et al., 1997), a well-established measure of relationship positivity and negativity. Additionally, it demonstrated moderate convergence with more general measures of social relationships (ISEL and TENSE) across three contexts (Studies 2 and 3). These findings, combined with the test-retest and validity information reported, suggest that the SRI can be used as an alternative measure in research settings that call for a more abbreviated measure of relationship quality (e.g., epidemiological, health care settings).

Although we have demonstrated the psychometric properties of the SRI, further improvements in its reliability can be achieved by utilizing more items. For instance, in Study 1, we asked three separate questions on positivity and negativity (i.e., understanding, advice, favor), whereas in Studies 2 and 3 these were combined into one question due to time constraints. As a result, the convergent validity of the SRI in Study 1 with the QRI was predictably higher than seen in Study 2. Conceptually, the inclusion of these separate items may be useful to test the matching hypothesis of support (Cutrona & Russell, 1990), as they reflect emotional, informational, and tangible support, respectively. Of course, these issues need to be balanced with the need for a brief assessment depending on the main study aims.

We also examined the discriminant validity of the SRI using personality assessments. Here, we focused on health-relevant personality factors because of the emphasis on utilizing the SRI in areas of relationships and health. This was important, not only for psychometric purposes, but because it has been argued that personality may influence one's perception of relationship processes (Bolger & Eckenrode, 1991). In Study 2, we found that the SRI positivity subscale was not related to any of the personality assessments; however, the SRI negativity subscale was associated with higher trait hostility and negative affect. We should emphasize that the same magnitude of association was found between the QRI conflict subscale and trait

hostility/negative affect. Thus, researchers wanting to demonstrate a unique influence of relationship negativity on health outcomes may need to consider these personality assessments (also see Study 3). However, we believe that a more fruitful avenue of research is to examine the interface between personality and relationship processes (Pierce, Lakey, Sarason, Sarason, & Joseph, 1997). Personality and relationships co-develop over time and, hence, are conceptually related in complex but fundamental ways (Sarason, Pierce, & Sarason, 1990; Smith & Gallo, 2000). Research from this conceptual perspective is likely to further advance theories/models in both substantive areas.

There are a number of conceptual issues that arise as a result of the structure of the SRI. First, it is worth repeating that an important advantage of the SRI is its ability to measure relationship positivity and negativity, whether at the level of specific relationships (e.g., spouse, friend, or co-worker) or across one's entire social network. This is important because relationship specific assessments may be used in future work to determine if individuals' social network members of similar relationship quality have equivalent links to health. For example, does an ambivalent supervisor and an ambivalent family member result in similar or different health outcomes for the individual given the importance of the work and home domain for many individuals? These assessments may also be used to contrast positivity and negativity as competing explanations for relationships influences, or to examine their joint influence in order to specify unique categories of relationships (e.g., ambivalent ties). The specification of unique relationships may be particularly important as we have demonstrated (Uchino, 2004) that ignoring the co-activation of positivity and negativity (i.e., ambivalence) results in weaker effects of supportive ties. That is, we found only a stress-buffering effect for supportive ties when these ambivalent ties were separated from supportive ties. This is likely due to the finding that the presence of ambivalent ties predicts high rates of depression and perceived stress and poorer cardiovascular profiles (Holt-Lunstad et al., 2007, 2003; Uchino, 2004; Uchino et al., 2001; Uno et al., 2002).

A second conceptual issue is related to the frequency distribution of these network ties. Similar to other research (Fingerman et al., 2004; Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005; see also Rook, 2001), we have found that supportive and ambivalent ties actually occur more frequently in individuals' networks than aversive ties. We do not suspect that the low frequency of aversive ties is an artifact of the cutoffs used to define the relationship categories. Rather, purely aversive ties may occur less frequently in social networks because most individuals choose not to maintain such sources of distress in long-term relationships. Likewise, Fingerman et al. (2004) have found that solely problematic (i.e., aversive) relationships are very few compared to solely close (i.e., supportive) and ambivalent ties. Nevertheless, it is worth emphasizing that despite the lower ratings of negativity in aversive or ambivalent ties, these ties are still important predictors of psychological distress (Rook, 2003; Finch et al., 1989).

In regards to the high frequency of ambivalent ties, individuals may choose to maintain these relationships because they derive benefits from the positive aspects of the relationship that coexist with the negative aspects. Another speculation for the high occurrence of ambivalent ties is that individuals choose to keep these relationships due to normative relationship obligations (e.g., a family member or an old childhood friend; Fingerman et al., 2004; Schuster et al., 1990). We are currently investigating these issues. Nevertheless, it is clear that ambivalent relationships are not an isolated feature of one's social network and, hence, need stronger consideration in relationships and health research.

Finally, relationship research is moving towards a conceptual consideration of both positivity and negativity in relationships. This is reflected in alternative models of relationship influences (Rook, 1998). For instance, one model (positivity model) predicts that positive aspects of social relationships will be a strong predictor of better health. However, several studies have found that negative aspects of social relationships appear to be stronger predictors of psychological outcomes compared to positive aspects of social relationships (Finch et al., 1989; Newsom et al., 2003; Rook, 1984). A second model (negativity model) would, thus, predict that negativity in social relationships would be a stronger independent predictor of negative psychological outcomes, even when considering positive aspects of social relationships (also see outcome specific model; Finch et al.). Indeed, research has suggested that over longer periods of time, negativity might outweigh influences that positivity may have on emotional outcomes (Newsom et al., 2003). Importantly, the conceptual and psychometric structure of the SRI allows for a test of these more complex relationship models.

### *Limitations and Conclusions*

There are several limitations in this study to be addressed. First, we did not examine the stability of the SRI across all types of social support functions (i.e., emotional, instrumental, belonging, and guidance). It is possible that the individual ratings of positivity and negativity, as well as the relationship categories, would differ accordingly. In our experimental manipulations (Uno et al., 2002), we found that the success of emotional support depended on whether the friendship was supportive or ambivalent, but found no such effects for instrumental support. However, in our prior survey work with the SRI, we averaged across support dimensions as analyses typically did not differ as a function of support types (Uchino et al., 2001). This issue will obviously need greater attention in future research, especially depending on the population of interest (e.g., cancer patients who rely on emotional support from their spouse). Finally, in some contexts, social desirability may also be a concern and it may be useful for future work to examine this issue (e.g., correlations between the SRI and social desirability scales, convergence of the participant SRI ratings with partner or friend ratings).

Another set of limitations is related to the relatively homogenous ethnic composition of our samples. The generalization of the SRI to different ethnic groups will need to be demonstrated. For instance, it may be useful to examine if relationship quality and network compositions are similar across different ethnicity groups (e.g., Caucasian, Asian, or African American). Revelation of such differences or similarities would be useful for researchers who wish to incorporate the SRI into their research. Finally, the brevity of the SRI is both its strength and weakness. In studies in which the length of the assessment is less important, the QRI or the ASSIS provide psychometrically strong measures to address these questions. Alternatively, a version of the SRI that allows aggregation across support components and/or contexts may further increase its reliability.

Despite these limitations, there are strengths to using the SRI. The SRI offers a shorter assessment of relationships than previously offered (i.e., ASSIS & QRI). This may be important for epidemiological studies in which relationship measures are one of several psychosocial assessments of interest. Importantly, the SRI also allows assessment of specific relationships (e.g., a spouse or a specific friend), specific support

domains (i.e., family, friends, coworkers), and total support network (e.g., frequency of ambivalent ties in one's total network). This flexibility allows for the testing of more complex (e.g., negativity model) or contextualized (e.g., older adult relationships) models of relationships and health.

On a final note, the SRI has implications for use in professional mental health settings. The ability to identify which support members are supportive, aversive, or ambivalent can be helpful in designing interventions or may facilitate the success of therapy. For instance, a patient can be taught how to elicit support from network members who are supportive, rather than ambivalent or aversive ties, or therapy can help resolve the negativity in ambivalent relationships (Cutrona & Cole, 2000). Importantly, the success of the course of the interventions (e.g., drug abuse or weight loss) can also be affected by the individual's social network (Cutrona & Cole; Gottlieb, 2000; also see Uchino, 2004). There may be network members who can facilitate change (i.e., supportive tie) and others that may impede change (i.e., ambivalent or aversive ties). Being able to identify those network ties and provide the patient (or the network member) with the support skills to facilitate positive outcomes might prove useful.

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